REMARKS

Claims 1-37 have been examined. Claims 1-11, 13-22, 24, 26, 27, and 33 have been rejected under 35 U.S.C. § 102(b), and claims 12, 23, and 25 have been rejected under 35 U.S.C. § 103(a). Also, the Examiner has indicated that claims 28-32 and 34-37 contain allowable subject matter.

I.   Objection to the claims

The Examiner has objected to claims 3-7 and 9 because they contain a typographical error. Applicant submits that the amendments to the claims overcome the objection. Claims 10 and 11 have been amended for similar reasons.

II.   Rejection under 35 U.S.C. § 102(b) over U.S.P. 4,881,617 to Faraone ("Faraone I")

Claims 1-6, 11, 13, and 14 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Faraone I.

A.   Claim 1

Applicant submits that claim 1 is not anticipated by (and would not have been obvious over) Faraone I. For example, claim 1 states that a latitudinal cross-section of the base portion has a shape of a closed conic section. On the other hand, Figs. 1-8 of the cited reference clearly show that the disclosed "base portion" does not have the claimed cross section.

On page 3 of the Office Action, the Examiner contends that Figs. 1 and 3 and column 4, lines 4-6, of Faraone I disclose a base portion that has a circular cross-section, which is one example of a cross-section having the shape of a closed conic section. Applicant respectfully disagrees that Faraone I shows a base portion having a circular cross section.

For example, claim 1 states that the base portion has a front end, which contains a discontinuity. In other words, the discontinuity is part of the base portion.

As shown in Figs. 1 and 3, a speaker cone is formed from various "segments" 5, 7, and 9. Also, a metal frame comprises a metal ring 13 and a central frame 15, and the ring 13 and frame 15 are connected together by brackets 17 and 19. (Column 5, lines 13-25). As best shown in Fig. 4, the speaker cone 5, 7, and 9 is mounted to metal frame 13, 15, 17, and 19 via a voice coil 3 and an absorption ring 11.

Based on the Examiner's notations to Fig. 1 of Faraone, the Examiner contends that the speaker cone 5, 7, and 9 corresponds to a base portion having a front end that contains a discontinuity. However, the cross-section of the speaker cone 5, 7, and 9 is not circular, as is readily apparent from Figs. 1 and 5. The Examiner seems to rely on the illustrations of the metal frame 13, 15, 17, and 19 to show a base portion having a circular cross-section. However, as noted above, the metal frame 13, 15, 17, and 19 is distinct from the speaker cone 5, 7, and 9 and thus, cannot correspond to the claimed base portion. In other words, the Examiner cannot simultaneously allege that (1) the speaker cone 5, 7, and 9 corresponds to the base portion in one of the claims (e.g. claim 1) and (2) the metal frame 13, 15, 17, and 19 corresponds to the base portion in another dependent claim (e.g. claim 14).

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Also, the Examiner maintains that column 4, lines 4-6, states that the Faraone I speaker cone has a circular cross-section. Applicant respectfully disagrees.

For example, column 4, lines 3-23, describe the structure of a <u>conventional</u> cone design, and the Faraone I speaker cone shown in Figs. 1-8 purportedly overcome the problems associated with the convention cone design. The primary reason why the Faraone I speaker overcomes the problems of the conventional cone design is because it has segments 5, 7, and 9. Since the segments 5, 7, and 9 also prevent the speaker cone from having a circular cross-section, Faraone I expressly teaches away from forming a speaker cone with <u>both</u> discontinuities <u>and</u> a circular cross-section.

In light of the discussion above, Faraone I does not teach a base portion having a circular cross-section or a base portion having a cross-section having a shape of a closed conic section.

B.   Claims 2-6, 11, 13, and 14

Since claims 2-6, 11, 13, and 14 directly or indirectly depend upon claim 1, Applicant submits that they are patentable at least by virtue of their dependency.

III.   Rejection under 35 U.S.C. § 102(b) over U.S.P. 5,880,412 to Faraone ("Faraone II")

Claims 1, 7-10, 15-22, 24, 26, 27, and 33 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Faraone II.

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A.   Claim 1

Applicant submits that claim 1 is not anticipated by (and would not have been obvious over) Faraone II. For example, claim 1 states that a latitudinal cross-section of the base portion has a shape of a closed conic section. On the other hand, Figs. 1-7 of the cited reference clearly show that the disclosed speaker does not have the claimed cross section.

On page 5 of the Office Action, the Examiner contends that Figs. 5 and 6 and column 1, lines 9-12, of Faraone II suggest a base portion that has a circular cross-section. However, Applicant respectfully disagrees.

For example, column 1, lines 9-12, states that the speaker cone has <u>arcuated</u> segments. Since the cross-section of a speaker cone with arcuated segments would not be circular, Applicant submits that such portion of Faraone II does not suggest a base portion having a circular cross section.

Also, as noted in the annotated version of the Fig. 5 of Faraone II, the Examiner contends that the portion of the cone 41 that is adjacent to the suspension ring 49 constitutes the front end of the base portion having a discontinuity. Therefore, the Examiner must be contending that the cone 41 corresponds to the claimed base portion. Consequently, the ring 49, the metal frame of the speaker, and the other components do not suggest the alleged base portion. Since the cross-section of the cone 41 is not circular, Faraone II does not teach a base portion having a "conic section shaped" cross-section as recited in claim 1.

In addition, Fig. 6 clearly shows the arcuated shapes of the segments of the speaker cone 41, and thus, the cross-section of the cone 41 is not circular.

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B.   Claims 7-10 and 15-18

Since claims 7-10 and 15-18 directly or indirectly depend upon claim 1, Applicant

submits that they are patentable at least by virtue of their dependency.

C.   Claim 19

Since claim 19 contains features that are similar to the features discussed above in

conjunction with claim 1, Applicant submits that claim 19 is patentable for similar reasons.

D.   Claims 20-22, 24, 26, 27, and 33

Since claims 20-22, 24, 26, 27, and 33 depend directly or indirectly on claim 19,

Applicant submits that such claims are patentable at least by virtue of their dependency.

IV.   Rejection under 35 U.S.C. § 103(a) over Faraone II

Claims 12, 23, and 25 have been rejected under 35 U.S.C. § 103(a) as being unpatentable

over Faraone II. Since claims 12, 23, and 25 directly or indirectly depend upon claim 1 or 19

and since Faraone II does not suggest all of the features of claims 1 and 19 (as discussed above),

Applicant submits that claims 12, 23, and 25 are patentable at least by virtue of their

dependency.

V.   Allowable subject matter

The Examiner has objected to claims 28-32 and 34-37 for being dependent upon a

rejected base claim, but indicates that such claims would be allowable if rewritten in independent

form. Since claims 28 and 34-36 have been rewritten in independent form and since claims 29-

32 and 37 directly or indirectly depend upon claim 28 or 36, Applicant submits that the objection

is overcome.

VI.   Newly added claims

Applicant has added new claims 38-58 to provide more varied protection for the

invention.

VII.   Conclusion

In view of the above, reconsideration and allowance of this application are now believed

to be in order, and such actions are hereby solicited. If any points remain in issue which the

Examiner feels may be best resolved through a personal or telephone interview, the Examiner is

kindly requested to contact the undersigned at the telephone number listed below.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/774,617

The USPTO is directed and authorized to charge all required fees, except for the Issue

Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any

overpayments to said Deposit Account.

Respectfully submitted,

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APPENDIX
VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

The claims are amended as follows:

1.   (Once amended) A speaker cone, comprising:

a base portion having a front end and a rear end,

wherein the front end contains at least one discontinuity such that a first distance from a reference point on a longitudinal axis of the base portion to a first point on the front end is different than a second distance from the reference point to a second point on the front end,

wherein a latitudinal cross-section of said base portion has a shape of a closed conic section,

wherein said latitudinal cross-section is located between said rear end and said at least one discontinuity, and

wherein said latitudinal cross section is substantially perpendicular to said longitudinal axis.

3.   (Once amended) The speaker cone as claimed in claim 2, wherein [the] at least one geometric mode resonance comprises an azimuthal mode resonance.

4.   (Once amended) The speaker cone as claimed in claim 2, wherein [the] at least one geometric mode resonance comprises a radial mode resonance.

5.   (Once amended) The speaker cone as claimed in claim 2, wherein [the] at least

one discontinuity comprises a first discontinuity,

wherein the first discontinuity comprises a radiating area that is substantially greater than

a radiating area of a portion of the front end opposed to the first discontinuity.

6.   (Once amended) The speaker cone as claimed in claim 5, wherein [the] at least

one discontinuity comprises the first discontinuity and a second discontinuity disposed adjacent

to the first discontinuity on the front end, and

wherein a radius of the front end gradually changes when travelling along the front end

from the first discontinuity to the second discontinuity.

7.   (Once amended) The speaker cone as claimed in claim 5, wherein [the] at least

one discontinuity comprises the first discontinuity and a second discontinuity disposed adjacent

to the first discontinuity on the front end, and

wherein a height of the front end gradually changes when travelling along the front end

from the first discontinuity to the second discontinuity.

9.   (Once amended) The speaker cone as claimed in claim 1, wherein [the] at least

one discontinuity causes a first portion of the front end to be located in a perpendicular plane that

is perpendicular to the longitudinal axis of the base portion and causes a second portion of the

front end to not be located in the perpendicular plane.

10. (Once amended) The speaker cone as claimed in claim 1, wherein [the] at least one discontinuity causes a radius of a first portion of the front end to be different than a radius of a second portion of the front end.

11. (Once amended) The speaker cone as claimed in claim 1, wherein [the] at least one discontinuity contains a plurality of discontinuities.

19. (Once amended) A speaker cone, comprising:

a base portion having a front end and a rear end,

wherein the front end contains a plurality of discontinuities that form a cyclical wave in the front end of the base portion,

wherein a latitudinal cross-section of said base portion has a shape of a closed conic section,

wherein said latitudinal cross-section is located between said rear end and said at least one discontinuity, and

wherein said latitudinal cross section is substantially perpendicular to said longitudinal axis.

28. (Once amended) A [The] speaker cone [as claimed in claim 19], comprising:

a base portion having a front end and a rear end,

wherein the front end contains a plurality of discontinuities that form a cyclical wave in the front end of the base portion,

wherein the cyclical wave is a sine wave defined by the following equation:

$$r(\phi) = r_0 + (A)(\sin [(m\phi)/(2\pi)]),$$

wherein $r(\phi)$ is a distance vector from a reference point on a longitudinal axis of the base portion to the front end of the base portion, ϕ defines a revolution angle of the vector $r(\phi)$ with respect to the longitudinal axis, and m and r_0 are constants.

34.   (Once amended) A [The] speaker cone [as claimed in claim 19], comprising:

a base portion having a front end and a rear end,

wherein the front end contains a plurality of discontinuities that form a cyclical wave in the front end of the base portion,

wherein a side of said base portion comprises a plurality of holes.

35.   (Once amended) A [The] speaker cone [as claimed in claim 19], comprising:

a base portion having a front end and a rear end,

wherein the front end contains a plurality of discontinuities that form a cyclical wave in the front end of the base portion,

wherein a side of said base portion comprises a plurality of slits.

36.   (Once amended) A [The] speaker cone [as claimed in claim 19], comprising:

a base portion having a front end and a rear end,

wherein the front end contains a plurality of discontinuities that form a cyclical wave in

the front end of the base portion,

wherein a side of said base portion comprises a plurality of ribs.